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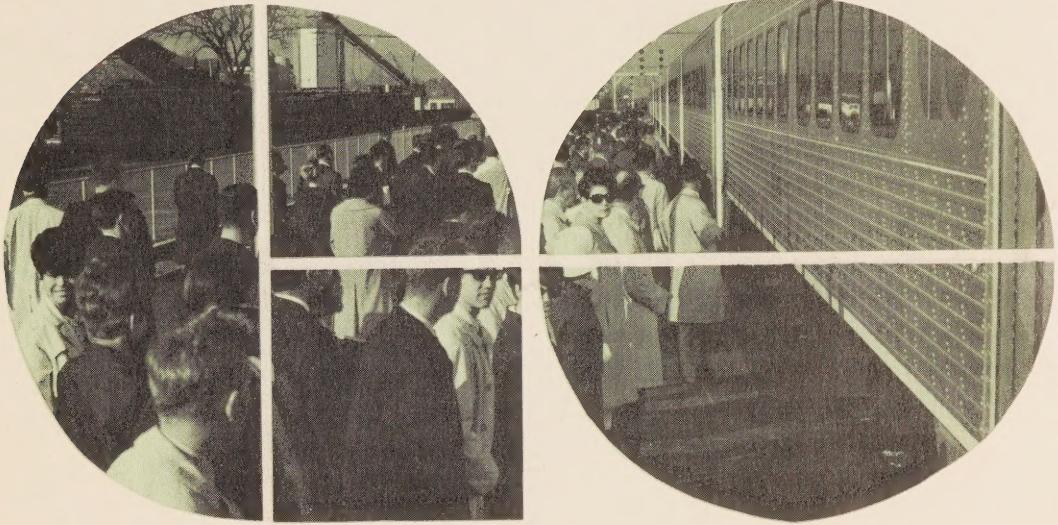
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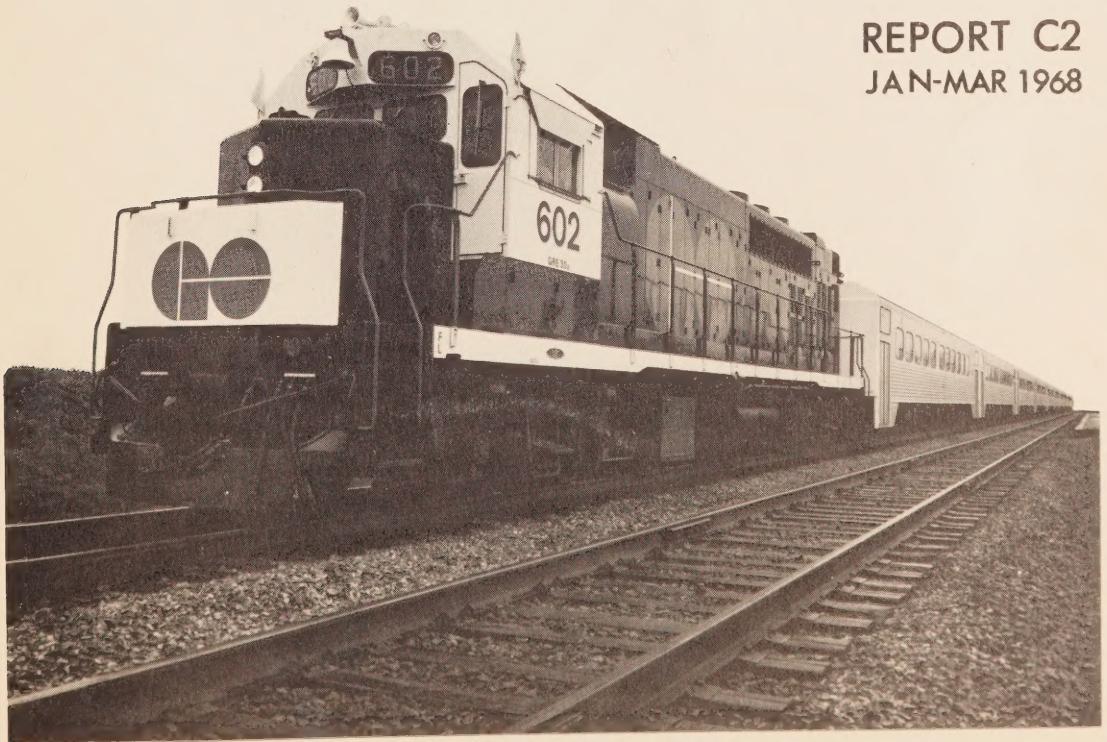
Ontario. Highway dept.

PEOPLE ON THE

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REPORT C2
JAN-MAR 1968





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PEOPLE
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Riding patterns and
trends on the Gov-
ernment of Ontario's
GO Transit rail service

REPORT C 2

January to March 1968

AUGUST , 1968

Government of Ontario Transit
is administered by the Department
of Highways of Ontario, and oper-
ated by the Canadian National
Railways.

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1. PREFACE

This is the second in the C-series of reports on riding patterns on GO Transit. These reports set out to record and analyze the riding patterns that have occurred during the past quarter, making reference also to earlier months in order to define emerging trends. The basic data is derived from ticket records supplied by the Canadian National Railways, and reference is also made to special research projects, such as previous on-train and household surveys, when it is felt that these can assist in explaining the observed variations in riding patterns.

Each report in this series will contain a basic section recording the recent riding patterns for weekday riders (both peak and off-peak) and passengers on Saturdays and Sundays. The format of these reports will not be rigid, however, and many of the contents will vary from quarter to quarter as new trends are seen to emerge, or new external factors are identified.



2. RESPONSE PATTERNS & TRENDS

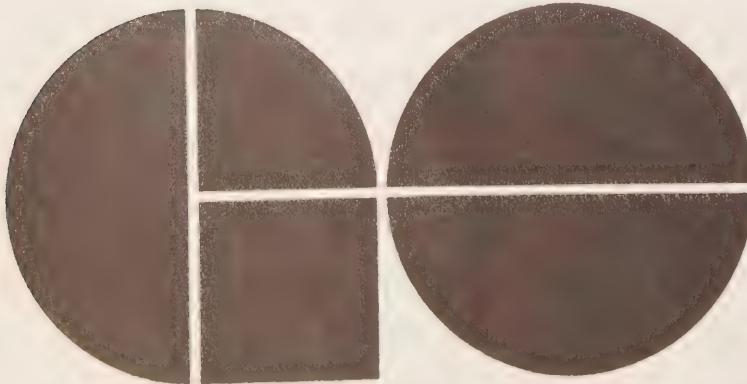
2.1 Introduction

The data used in this section is derived from ticket records supplied to GO Transit by the Canadian National Railways. A full breakdown of the data is executed for Wednesdays only as the volume of tickets involved would make a complete daily breakdown a task out of proportion to the additional information received (see Report C1 for a comparison between Wednesdays and other weekdays). Many of the charts that follow are based on the average Wednesday carryings to form comparisons and trends from month to month.

Reference is often made in this report to "total exits" or "exiting". These simply refer to the number of people leaving a train at a particular station. Clearly the total number of exits at all stations in any one day is equal to the total number of trips that were made on GO Transit that day.

The months of January, February and March experienced the varied weather typical of this period of the year. These changing climatic conditions were strongly reflected in the daily pattern of GO Transit patronage and the weather was by far the most dominant external factor during the quarter. The effects of the weather are discussed in detail in Part 3 and other relevant sections of Part 2.

One week in March was the schools' winter holiday and weekday carryings during this period (from March 18 to March 22) were very much higher than for the other weekdays in March. In order to retain comparability with other months, and to present a realistic continuation of recent trends, this week has been excluded from many of the tables in this report.



2.2 Monday to Friday weekly trend

Figure 1 shows the average weekday exits for each week since the start of service on May 23, 1967 to March 1968.

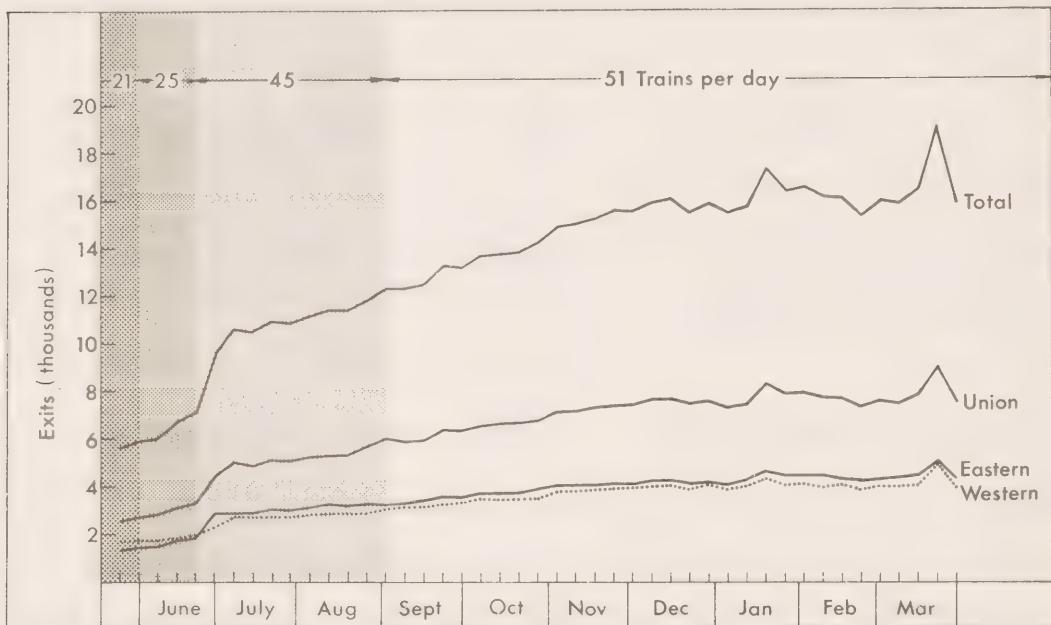


FIGURE 1 : The weekday riding pattern established since the start of the service.

The figure reveals that during the first three months of 1968 the pattern of riding in the western and eastern corridors were very similar.

The number of riders exiting at stations in the western corridor was around 7% fewer than those exiting in the eastern corridor during January. This percentage increased to 8% and 9% for February and March respectively, suggesting that patronage in the western corridor was decreasing relative to that in the east.

Exits at Union Station represented just under half of all exits (47% to 48%) reflecting the predominance of two-way suburban station to Union Station trips. The pattern of riding for Union Station was similar to that for the suburban corridors. This was expected as most of the people exiting at Union would also exit (on their return trip) at a suburban station.

There were two weeks during the three month period when the weekday average showed a marked increase. These were the third week in January -- when a severe snow and ice storm affected the Toronto region -- and the third week in March, which was a school holiday. The last week in February experienced a noticeable drop in patronage due to the very cold weather experienced throughout that week. The influence of the weather is discussed further on page 26.

Figure 2 shows the overall trend in weekday riding that has occurred since the early days of the service. The smooth curve has been obtained by taking a five week moving average of weekday exits. This technique reduces the effect of week by week fluctuations and presents a more stable trend. (The school holiday week during March was excluded from the data).

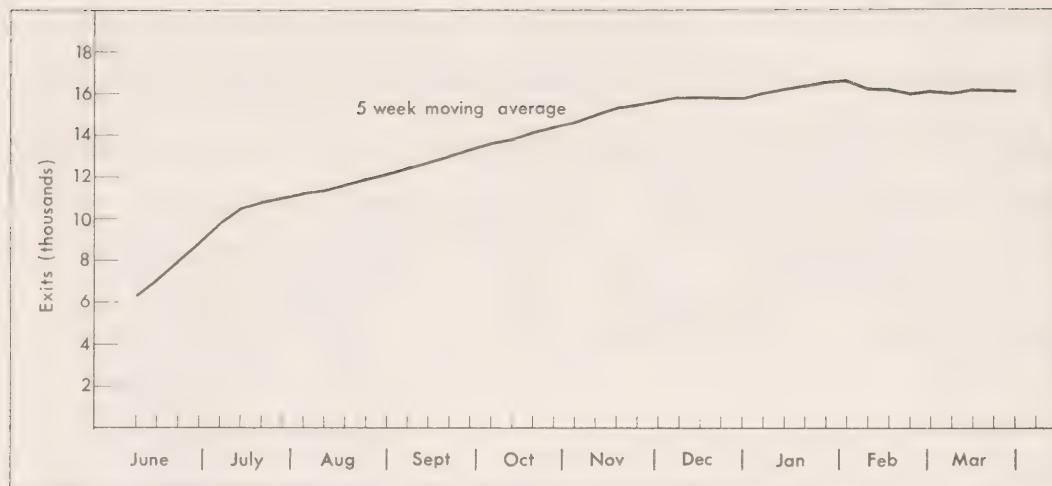


FIGURE 2 : Overall smoothed weekday trend since the beginning of the GO Transit service.

Average weekday riding increased each month from the start of the service until the end of January. The rate of growth each month continually decreased over this period, as the table below shows:

	Monthly average weekday riding						
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
No. of riders	12,800	14,000	15,200	15,800	16,300	16,000	16,100
% increase over previous month	10	9	9	4	3	-2	1

These figures show that, after eight months of continuous growth, weekday riding tended to level off during February and March. Figure 2 bears this out: the curve shows that patronage remained virtually constant at around 16,000 trips per weekday during February and March. Possible explanations for these riding trends are presented in the next section, in which the peak and off-peak components of weekdays are examined separately.

2.3 Trends in peak & off-peak riding

For ease of analysis, peak passengers are defined as those riding inbound towards Toronto Union Station from both the eastern and western corridors during the 6:00 a.m. to 9:00 a.m. period and those riding outbound in the evening between the hours of 4:00 p.m. and 7:00 p.m. All other riders are considered as travelling in the off-peak.

The results of an on-train survey conducted on November 1, 1967 showed that the characteristics of riding in peak and off-peak periods were very different and revealed that the purposes for which people took trips on GO Transit varied according to the time of day they were travelling.

Purpose of trip	Peak riders	Off-peak riders
	%	%
Work	87	43
Business	2	8
Shopping	2	13
School / University	6	16
Entertainment	1	9
Social	1	6
Personal services	+	4
Other	+	1

The way that total riding has been split between peak and off-peak riders can be seen from Figure 3, which also breaks down riding by direction and time of day.

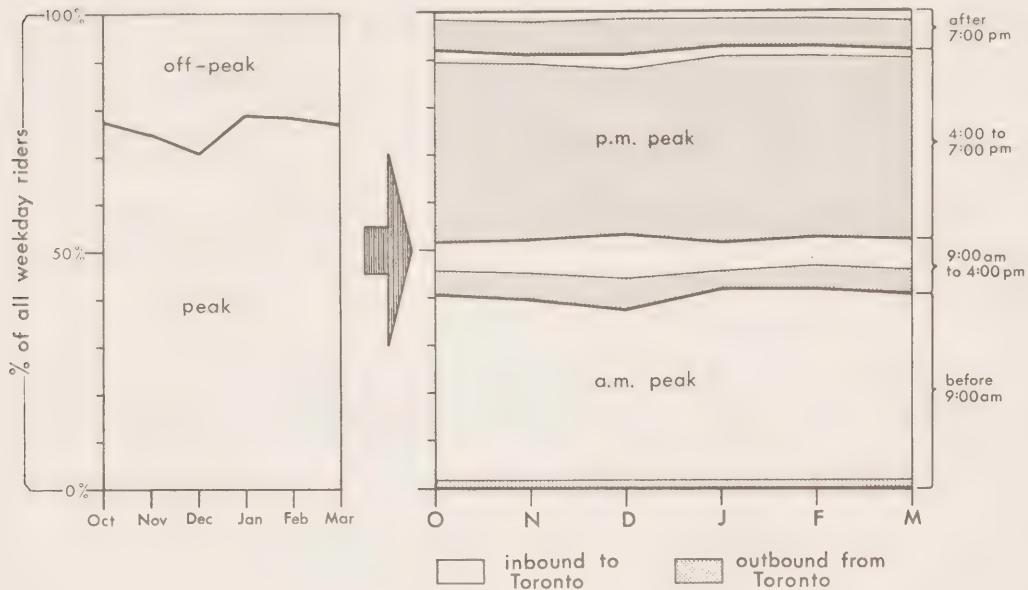


FIGURE 3 : The distribution of weekday riders by time of day and direction of travel.

As was noted in report Cl, off-peak riding during December was very high due to the importance of this period for shopping and the increased use of GO Transit to reach the downtown area for seasonal activities. In January, these factors were no longer relevant and off-peak riding fell to the level of importance it had previously experienced in October 1967.

The severe weather experienced at intervals during January was seen to boost peak riding but off-peak riding appeared to remain static. Some theories on this are suggested in section 3.2. During February and March, however, riding in the midday and evening

off - peak periods increased slightly, possibly due to a tendency for discretionary trips to increase as the winter proceeds.

The actual peak and off-peak carryings are analyzed separately below.

Peak trips : the pattern of peak trips over the last six months can be gauged from figure 4, which is based

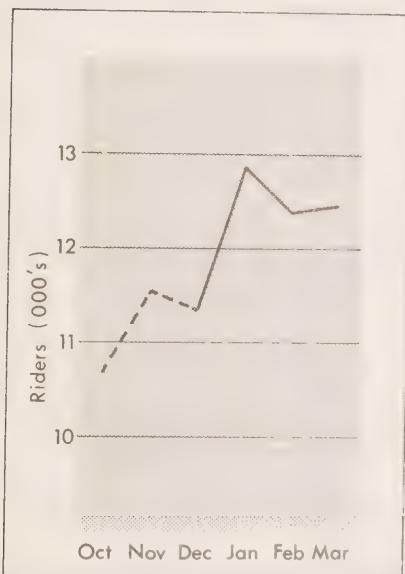


FIGURE 4 : Peak trips.

on the Wednesday average for each month. Peak trips increased between October and January, except for December which showed a slight drop from November. This drop was mainly due to the last Wednesday in the month, when peak carryings were uncharacteristically low; if this day were excluded, the average for December would have been slightly higher than for November.

The high peak carryings that were experienced during January were due mainly to the extreme weather conditions in that month. February was a comparatively mild month and carryings consequently dropped off to a level which was maintained through March.

Figure 5 shows the peak carryings for each Wednesday: the curve has been obtained by taking a five week moving average which tends to smooth out the effects of week-by-week fluctuations. The seasonal trend line

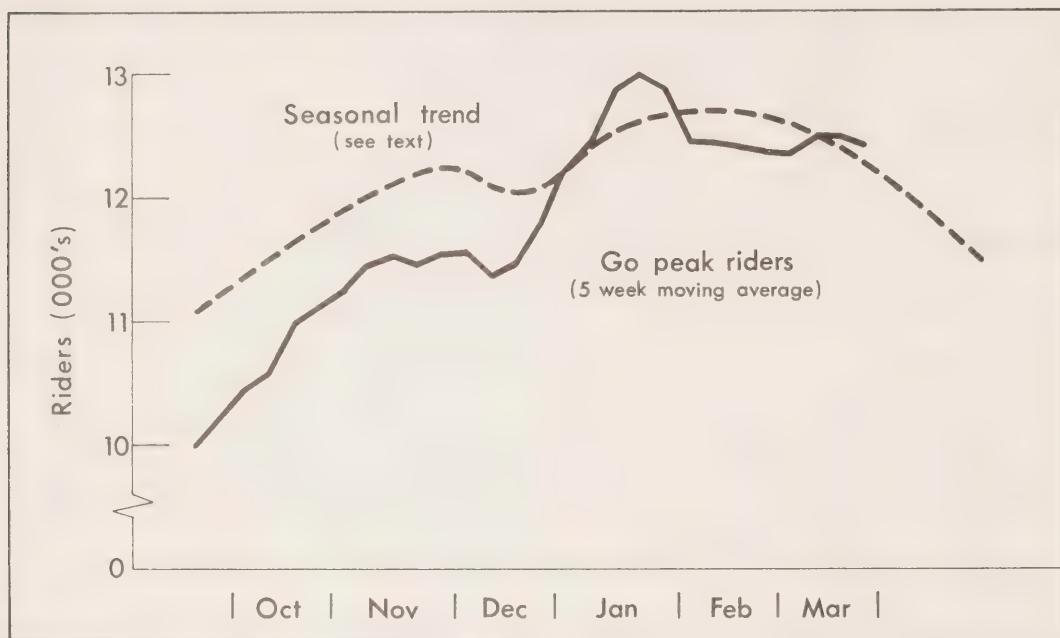


FIGURE 5 : GO Transit peak riding is compared with a trend derived from carryings on the former CNR service.

which has been superimposed on the graph was derived from data relating to carryings on the CNR service which operated between Hamilton and Toronto prior to the introduction of GO Transit. This consisted of two trains to Toronto in the morning and two back to Hamilton in the late afternoon and was therefore essentially a peak hour service. The actual carryings on this service were, of course, very much lower than those recently experienced by GO Transit, and the trend has accordingly been scaled so as to be comparable with the average level of GO riding over the six month period.

GO Transit riding was well below the trend line during October and November, reflecting the fact that the GO service had only been in operation since the previous May, and was still experiencing an initial growth tendency whereas the trend line was derived from a long-established service. In spite of this it would seem that GO Transit peak riding is following the previously established seasonal pattern of increase from early fall until winter, followed by a subsequent decrease through spring and levelling off during the summer.

Off-peak trips : Figure 6 shows the monthly variation

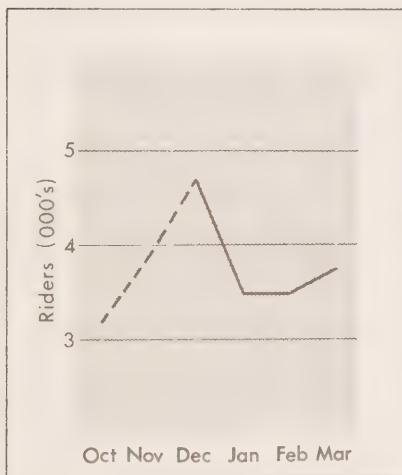


FIG 6: Off-peak trips

of off-peak riding during the period under review. The fall-off that occurred during January was due to off-peak riding returning to a more stable level after the aforementioned November and December boosts. This level was maintained during February and increased slightly during March, due wholly

to an increase in riding from the eastern corridor stations.

From the evidence so far accumulated, it seems as though off-peak riding tends to remain reasonably static in the absence of any large external factors. The high percentage of shopping, social and entertainment trips suggests that many off-peak trips are discretionary in the sense that

their timing and frequency are flexible. There is, therefore, no constant incentive for discretionary riders to use GO Transit as there is, say, for people commuting to their jobs, and it is only when there are significant external factors in operation that a concentration of such trips occurs.

2.4 Saturday, Sunday & holiday riding

Saturdays : the variation of carryings on Saturdays over the period under review can be gauged from figure 7.

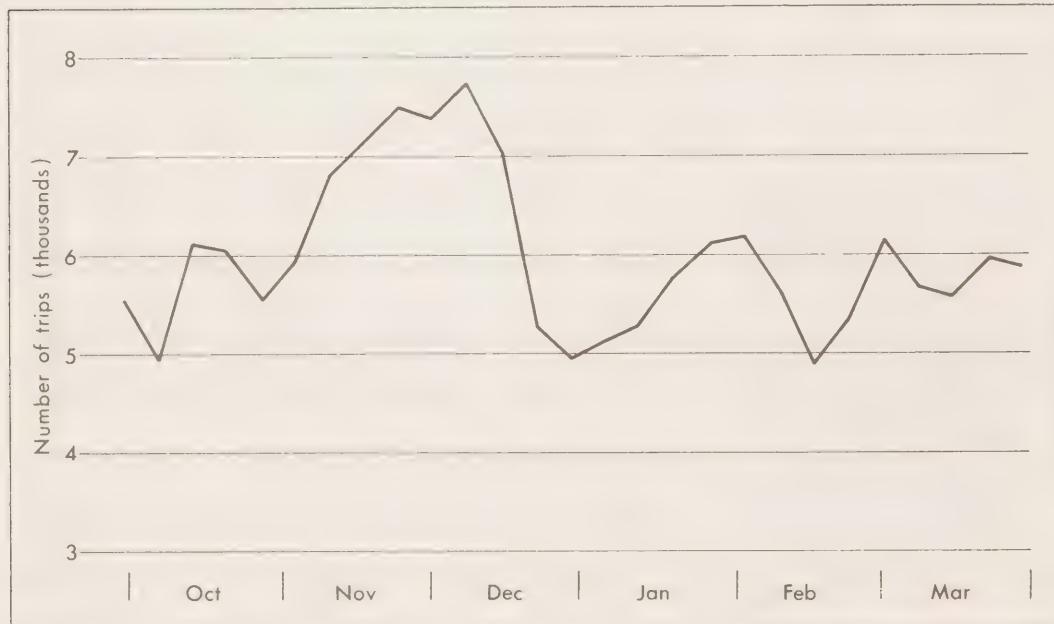
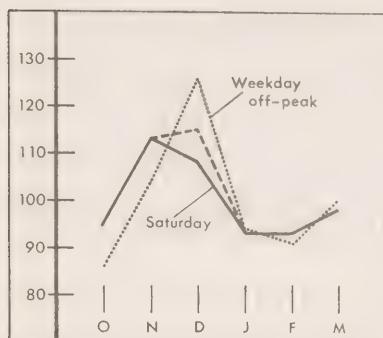


FIGURE 7 : Saturday trips.

Saturday riding predictably fell after Christmas to around the level that had been observed during October before the seasonal boost came into effect. Riding on Saturdays during January, February and March fluctuated between 5,000 and 6,000 with March showing the highest average for the quarter.

As can be seen from the inset, the monthly average Saturday carryings have followed a pattern which is



similar to that observed for (Wednesday average) off-peak riding.

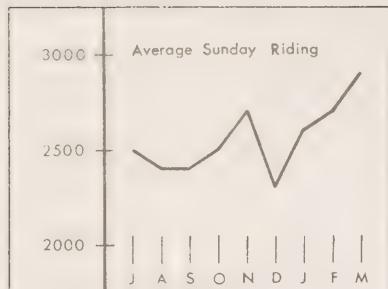
(The December Saturday average was reduced appreciably by the effect of the fifth Saturday, December 30. The broken line

shows the average for this month based on just the first four Saturdays). This similarity is no doubt due to the high discretionary component of both Saturday trips, and weekday off-peak trips. Both are subject in different measures to influence by the same factors and this has been reflected in the response.

Sundays : After falling-off sharply at the end of December and the beginning of January, Sunday riding recovered to the level previously experienced in November and fluctuated between 2,500 and 3,000 during February and March. The average for March was 2,900, the highest Sunday average so far experienced.



FIGURE 8 : Sunday riding.



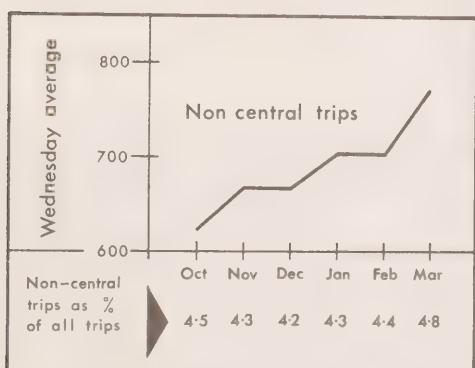
As the inset shows, there is the suggestion of a slight upward tendency for Sunday riding, but it is too early to be sure whether this is a trend which is likely to continue.

Holidays : the only holiday that was contained within the review period was New Years, January 1, when the system carried 2,500 people -- the second lowest carryings experienced for holidays. (The lowest was on Christmas Day, when 2,230 people rode the GO trains).



2.5 Central & non-central trips

Central trips are defined as those whose origin or destination is Union Station. These constitute around 95% of weekday trips. The remaining 5% are non-central, or trips taken between suburban stations. Figure 9 below shows the variation of non-central trips by month (based on average Wednesdays) both in terms of number of riders, and also expressed as a percentage of all riders. Although increasing in terms of actual



riders, non-central trips as a percentage of all trips decreased during November and December, due to the large seasonal emphasis on the downtown area boosting central trips.

FIG 9: Non-central trips. Since December, non-central trips have steadily increased in relation to all trips.

Although fewer in number, non-central trips at weekends accounted for a higher proportion of total trips than for weekdays. During the January to March quarter, the percentage of non-central trips averaged around 8% of all trips on Saturdays and 18% on Sundays. The high proportion of non-central trips on Sundays was probably due to the significance of this day for social visits, with their associated suburban emphasis.

About three-quarters of all non-central weekday trips were taken during the morning and evening peak periods, suggesting that many of these trips were taken by people commuting to work. Figure 10 shows the number of non-central riders who exited at each suburban station on the average Wednesday in March. Pickering, Danforth and

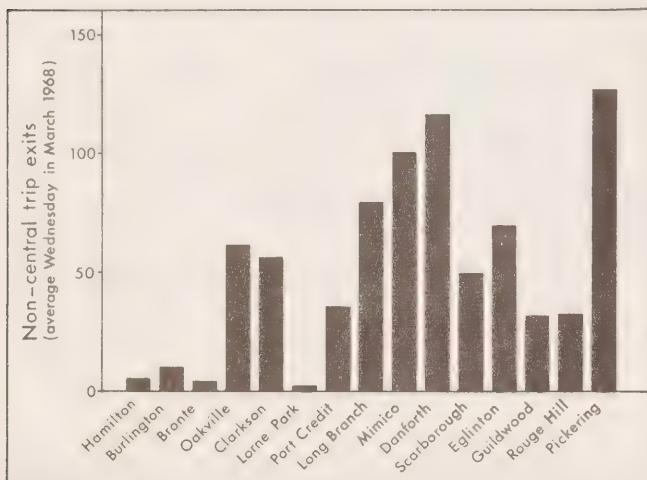


FIGURE 10 : Non-central exits.

eastern terminus, helps serve such communities as Ajax, Whitby and Oshawa.

Mimico showed the largest number of exits: Danforth has a convenient subway link with midtown, Mimico has proximity to industry and transit connections with Etobicoke, and

Pickering, being the

With regard to the large portion of GO Transit trips -- those originating or terminating at Toronto Union Station -- most of these trips during the working week appeared to be two-way or return trips, as exits at Union accounted for nearly half of all Union trips (exits and entries). The suggestion is clearly that most people exiting Union Station at some time in the day would also have entered at some other time. This equality of entries and exits was also observed for Saturdays, while on Sundays there tended to be more exits than entries, suggesting one-way

trips or return trips on different modes. The table below illustrates this:

People exiting GO trains at Union station as % of all central riders			
	Jan.	Feb.	Mar.
Average Wednesdays	49.7	49.7	49.7
Saturdays	49.6	49.3	49.9
Sundays	50.6	52.3	54.3



2.6 Patronage trends at individual stations

Figure 11 shows the average weekday exits at the suburban stations for the months of January, February and March.

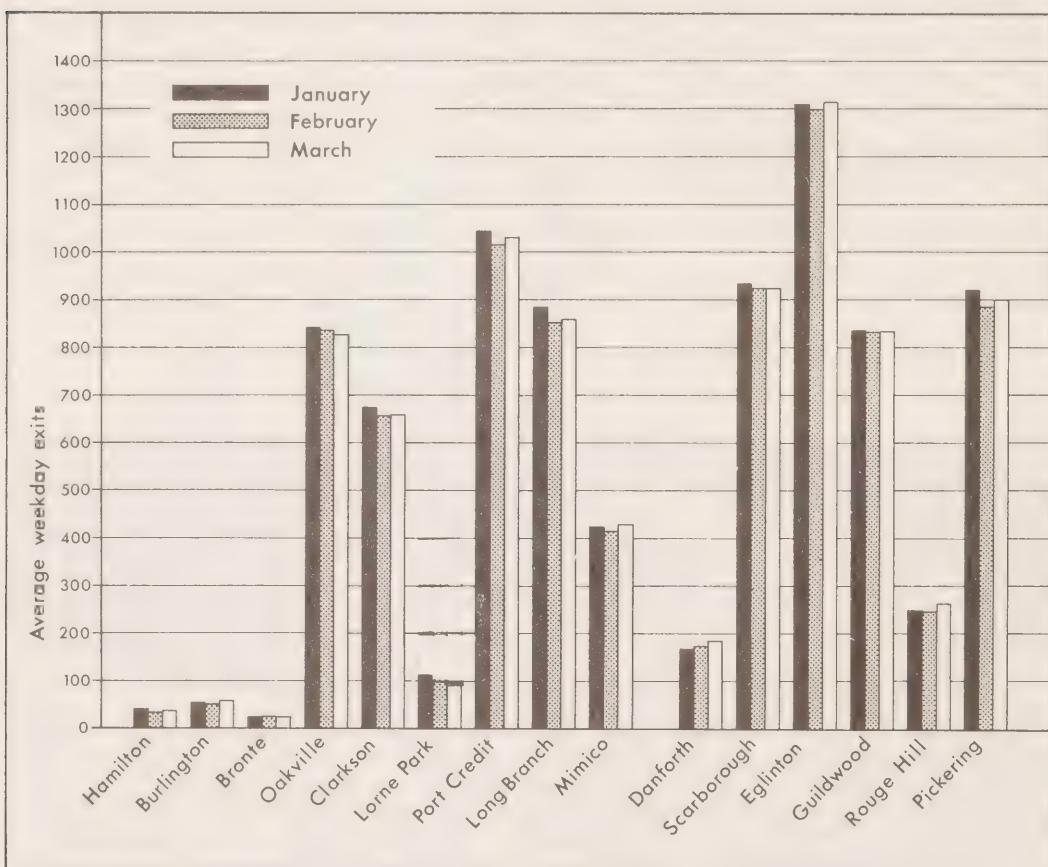


FIGURE 11 : Average number of people exiting at the suburban stations during January, February and March.

After the cold weather boost that occurred in January, all stations except Danforth experienced decreases in patronage during February. Many stations regained riders during March, but only Mimico, Danforth, Eglinton and Rouge Hill experienced a significantly greater number of exits in March than in January. (The data for the chart excludes the abnormal school holiday week in March).

The patterns of weekday exiting at Toronto Union Station and stations in the eastern and western corridors can be compared from figure 12, which shows each set of exits indexed to the same scale. The eastern corridor stations

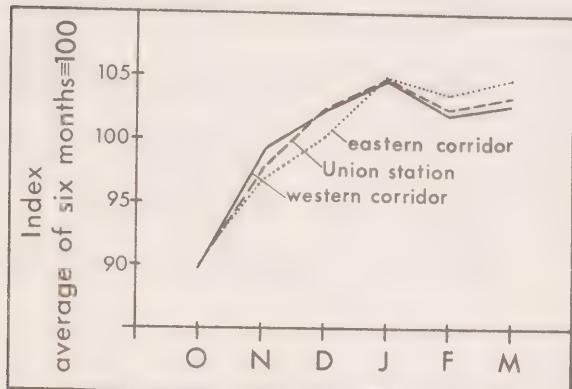


FIGURE 12 : Index of exits at Union Station and at stations within the eastern and western corridors.

showed the greatest increase during January, and also the least decrease during February. Through March, all groups of stations showed an increase but only the eastern corridor stations regained the patronage level achieved during January.

2.7 Children on GO Transit

Children under 4ft. 8 ins. -- corresponding to an age of around 12 years -- can ride between any two stations on the GO Transit system for 25¢, and it is these riders who are described in this section.

The number of children riders varies appreciably from month to month, as indeed do the factors which promote their motive for taking a trip. In school term, most children are educated at a school within reasonable proximity of their home and thus have no need to make a regular trip which could be taken by GO Transit.

However, there were many school trips taken on GO Transit and these, comprising large parties of children, accounted for almost half the total number of children riding during term time. Figure 13 shows this, and also shows that child

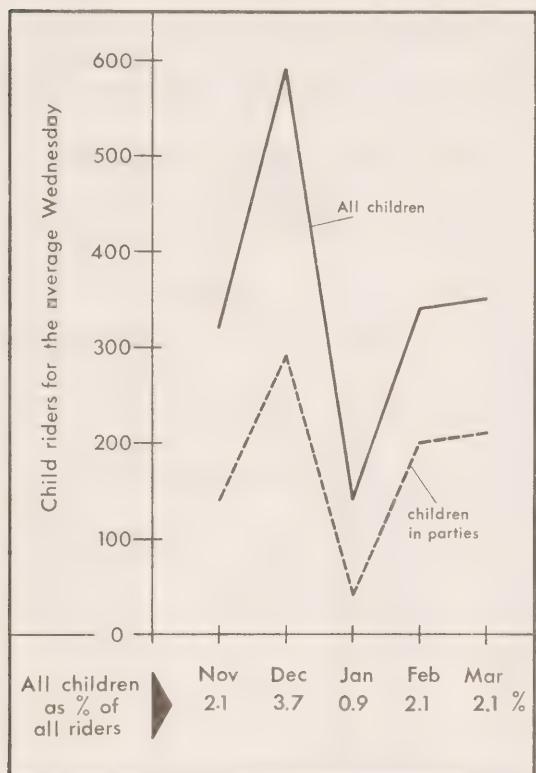
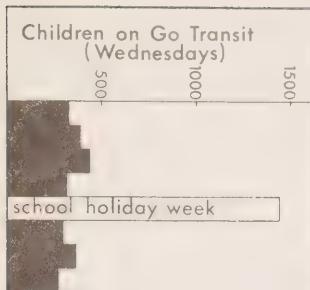


FIGURE 13 : Children riders on GO Transit varied appreciably from month to month.

riding fell heavily during January, following the large boost that predictably occurred over the period prior to Christmas. However riding by children, especially those in parties, increased appreciably through February and -- to a lesser extent -- March.

During school holidays, children are free to travel with their parents, or in groups together. (It is

unlikely that many children under 12 would be travelling alone). Their trips are therefore discretionary and, in most cases, lack a common motivation. However, occasionally there are events which are large attractors of children, and then the carryings of children on GO Transit are appreciably boosted. This was observed during the schools winter holiday week, March 18 to 22 (excluded from figure 13), when the downtown stores held large child-oriented attractions. A total of 1,400 children, representing 7% of all riders, used GO Transit on Wednesday, March 20,



contrasting sharply with previous and subsequent Wednesday carryings (See inset). During this week, children represented one-quarter of all midday off-peak riders. The daily carryings over this week were around 3,000 higher than average, suggesting that these children were accompanied by many adults and older children.

At weekends, children are out of school and their parents are often free to travel with them. Consequently, it is not surprising that the proportion of children riding GO trains on Saturdays and Sundays is much higher than during the working week. During January, February and March, children averaged around 10% of all riders on Saturdays and 11% on Sundays, compared with 2% on weekdays.

3. PASSENGER RESTRAINTS & ATTRACTORS

3.1 Internal factors

Shortage of seats : the most significant passenger restraint was that imposed by the shortage of seats during the peak hours. The number of cars available was inadequate to satisfactorily carry the many peak riders and standing occurred on several trains to and from the inner suburban stations during these times of the weekday. Figure 14 shows how the number of standees varied from Wednesday to Wednesday.

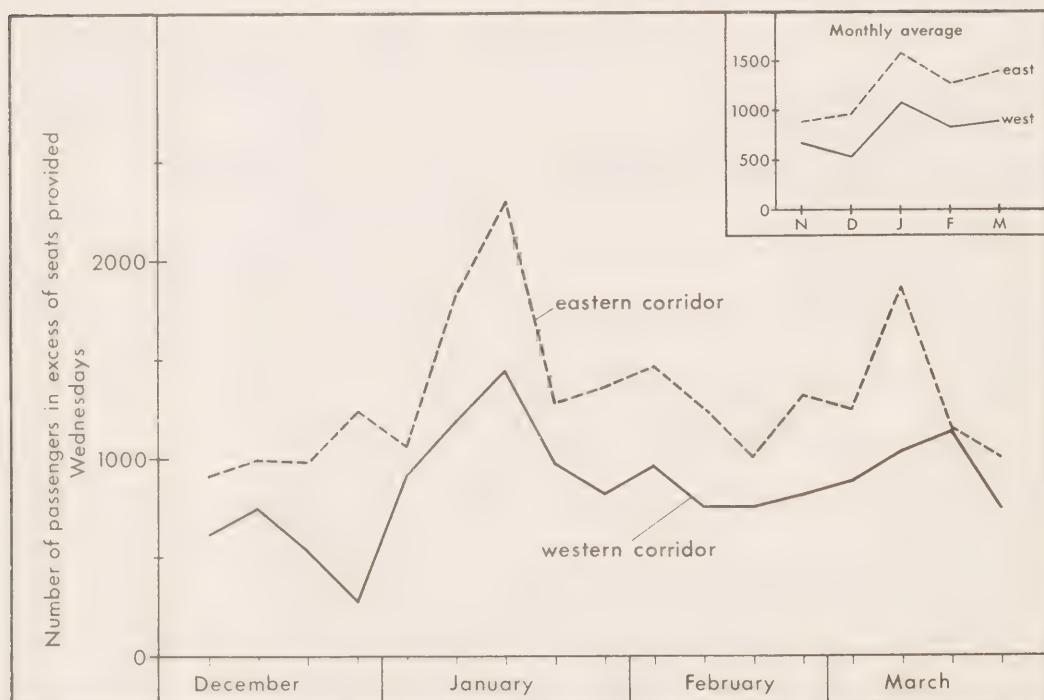


FIGURE 14 : Many riders had to stand on morning and evening rush hour trains in both corridors.

The high peaks in January occurred during the week of severe ice and snow. More people were required to stand

within the eastern corridor than within the west due to the higher peak carryings that were experienced to and from the eastern stations. On average, standing occurred on a total of 14 trains per weekday (four in each direction in the morning, and three in each direction in the evening) and passengers on these trains typically had to stand to and from Long Branch in the west and Eglinton in the east.

The percentage of all weekday riders who were required to stand was highest during January, being 16%, but dropped to 13% and 14% through February and March respectively.

Shortage of parking spaces : another factor which restricted patrons at some stations was a shortage of space in the GO Transit parking lots. This mainly related to people driving to the station to catch the later morning rush hour trains. As figure 15 shows

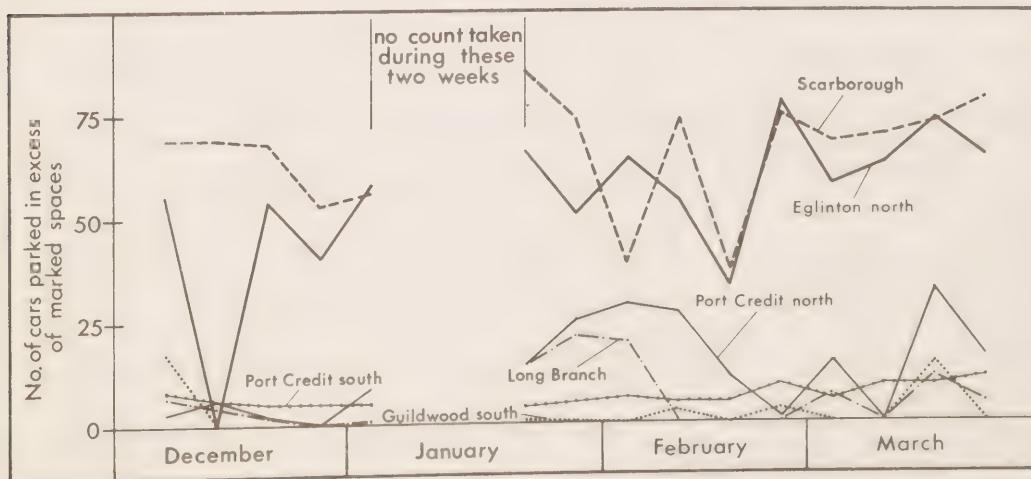
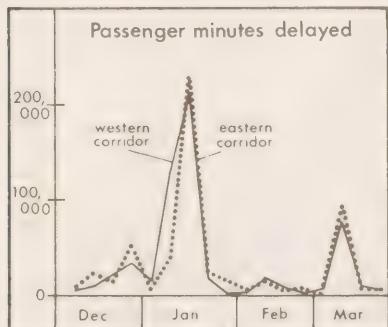


FIGURE 15 : In spite of strenuous efforts to increase car parking spaces, the lots at the stations above could not accomodate all the people who wished to park at them.

the worst affected lots were Scarborough and Eglinton North although there was quite a large amount of unused land around the Scarborough station which was utilized by late parkers. At Eglinton, there was plenty of spare capacity at the south lot, which has less convenient access than the north lot, but some people clearly preferred to park on nearby streets rather than use the south lot. In the western corridor, Port Credit north lot was the most heavily utilized. The counts taken in the western corridor station lots included only those cars parked in excess of marked spaces within the lots themselves and did not include other cars parked in the general vicinity. These counts, therefore, could be slightly understated.

No counts were taken during the week of severe weather in January, or the following week.

Train performance : the reliability of the GO trains during the three months under review reflected to some

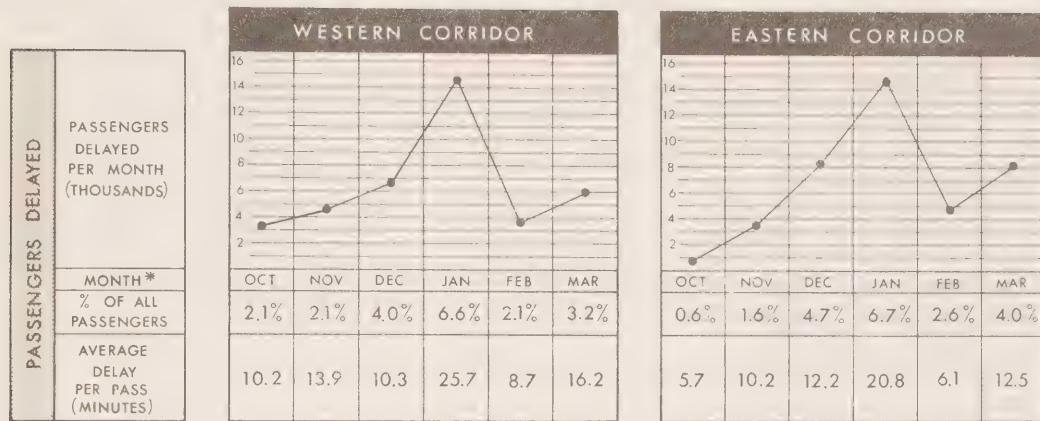


extent the two significant snow storms that occurred (see inset).

The high peaks in January took place during the week of severe ice and snow, while the smaller,

but none-the-less significant, peaks in March reflected the less severe snow storm which occurred during the second week. The table below details the number of passen-

gers delayed each month and other relevant data.



During the five week period recorded in January, nearly half of the 29,300 passengers delayed were during the week of January 14 to 20. Even taking this into account, less than 7% of all passengers were delayed during January, and it is worth noting that, on Monday, January 16, when most other forms of transportation were at a standstill, GO Transit succeeded in operating 28 out of 51 trains on time, while 10 trains had to be cancelled.

3.2 External factors

The weather : by far the most dominant external factor influencing carryings on GO Transit was the weather and it is intended to deal with this aspect in some depth. Observation of the variation of riding levels with climatic conditions has led to an initial understanding of the relationship between rail carryings and the weather.



Figure 16 shows the weekday carryings during January, February and March, and also the mean temperature in downtown Toronto. Fridays are identified by heavy dots, as this day has emerged as being the day of heaviest patronage during the working week. Many of the peaks

that occurred during the period under review were due to this emphasis on Fridays, rather than to other external factors.

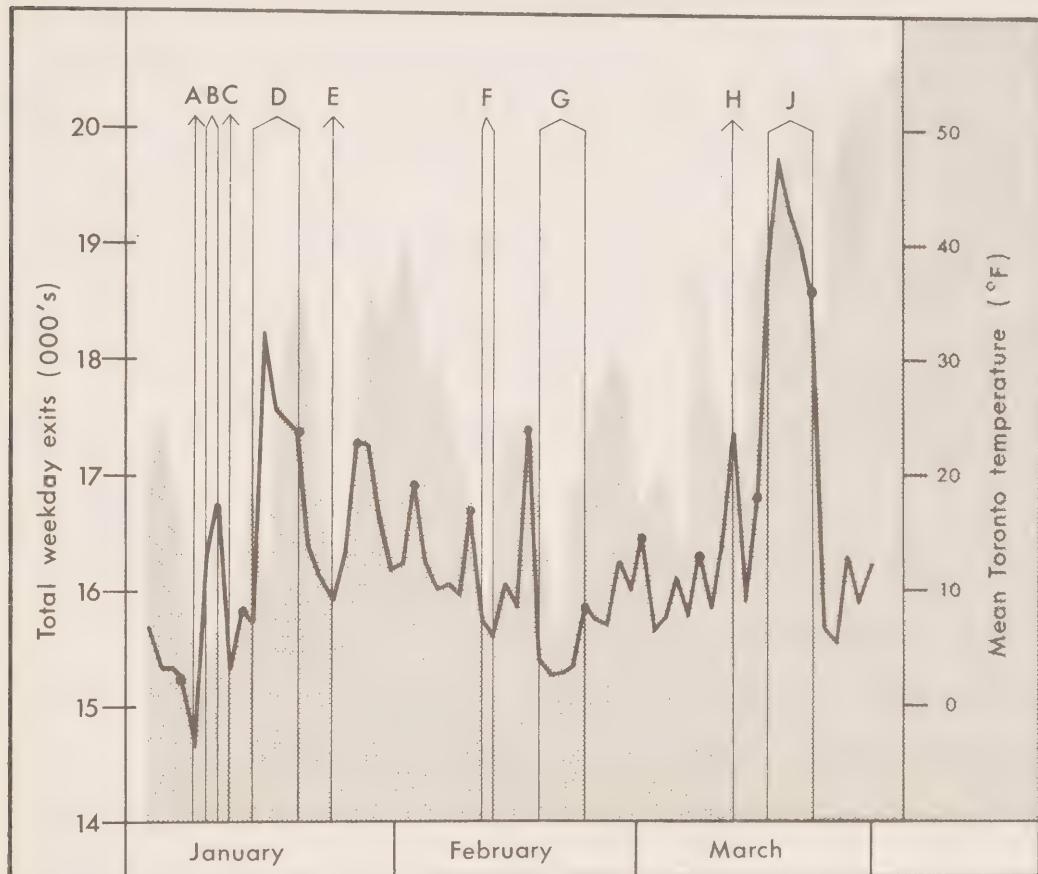


FIGURE 16 : Carryings on GO Transit, together with the mean temperature in downtown Toronto, are shown for each weekday during January, February and March.

Some of the more interesting weather conditions have been identified on figure 16. On occasions A,C,E,F, and G, very cold weather was experienced and carryings dropped accordingly. For the two days in period B, snow fell during the first day and made driving hazardous on that evening and the next morning. Carryings were boosted as a consequence.

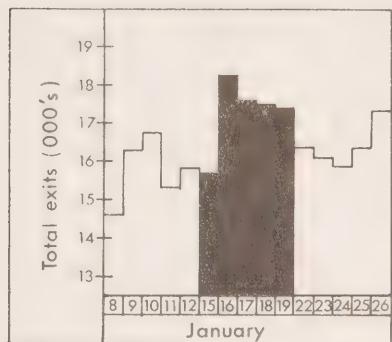
Period D comprised the week of January 15 to 19, when the most severe weather of the winter of 1968 was experienced

(shown in black on the inset).

On Sunday, January 14, freezing rain followed by snow blocked many roads, brought power lines down and generally disrupted travel around the Toronto area. On Monday

many schools were closed and some regular commuters were unable to get to their place of work due to blocked roads. The GO Transit parking lots were snowbound and carryings on that day were far below normal. However, the situation was eased somewhat on Tuesday and many roads were cleared, although driving was very hazardous. The GO Transit parking lots were accessible and carryings soared to the highest level recorded since the Canadian National Exhibition. Clearly many people who normally travelled by car used GO Transit. Patronage remained high for the rest of the week, even though the roads were reasonably clear by Thursday.

H identifies Wednesday, March 13, which again illustrates the effect of snow on rail carryings. On the previous day, snow fell from around 9:00 a.m. and continued through the day until nearly one foot deep. Carryings on this day were not boosted appreciably as many people were al-



ready committed to returning home by the mode of transportation used that morning. However, on the Wednesday, roads were open but driving was unpleasant and as a consequence riding on GO Transit was well above the Wednesday average. On Thursday, road conditions were fair and carryings dropped to the normal level for the month.

Period J was the school winter holiday week and carryings were accordingly much higher than usual (see 2.7).

From the observation thus made, the following general conclusions can be drawn:

1. Conditions that adversely effect other modes of transportation, particularly driving, such as snow, ice and fog, tend to boost GO Transit carryings.
2. These boosts are generally short-term and carryings fall again when conditions return to normal.
3. The timing of the commencement of snow fall affects the impact that it has on the individual day. If conditions are bad early in the morning, for instance, the car driver may decide to switch to rail for his trip. If the severity of conditions does not become apparent until later in the day, the car driver is already committed to driving home, and only very extreme conditions are likely to cause him to abandon his vehicle and take to rail.

4. Cold weather without other factors such as snow, tends to reduce rail riding. This may be due to the waiting required on GO Transit platforms, even though heated shelters are provided to accommodate most commuters.

A further point of interest concerned the behaviour of off-peak riders. It was noticed that while peak riding was noticeably boosted by certain of the weather conditions described above, off-peak riding appeared to remain relatively static. It seemed unlikely that these riders should be so unaffected by the vagaries of the weather and a hypothesis presented itself. It has been shown that although many off-peak riders are commuting to work, many more are taking trips that are discretionary in the sense that they can exercise control over when they take the trip, or whether indeed they take it at all. Adverse weather conditions are thought to have boosted the car-ryings of off-peak commuters, just as was experienced in the predominantly work-trip oriented peak periods. However, this appears to have been offset by the probable postponement of many of the discretionary trips that might otherwise have been taken, and these two opposing factors could explain the apparent stability of off-peak riding.

Other factors: no other marked external factors were detected during the review period, with the exception of the school holiday week, which has already been discussed.

